May 29, 1945. O. B. SUTTON 2,377,051

REFRIGERATION

Filed Aug. 23, 1940 2 Sheets-Sheet 1

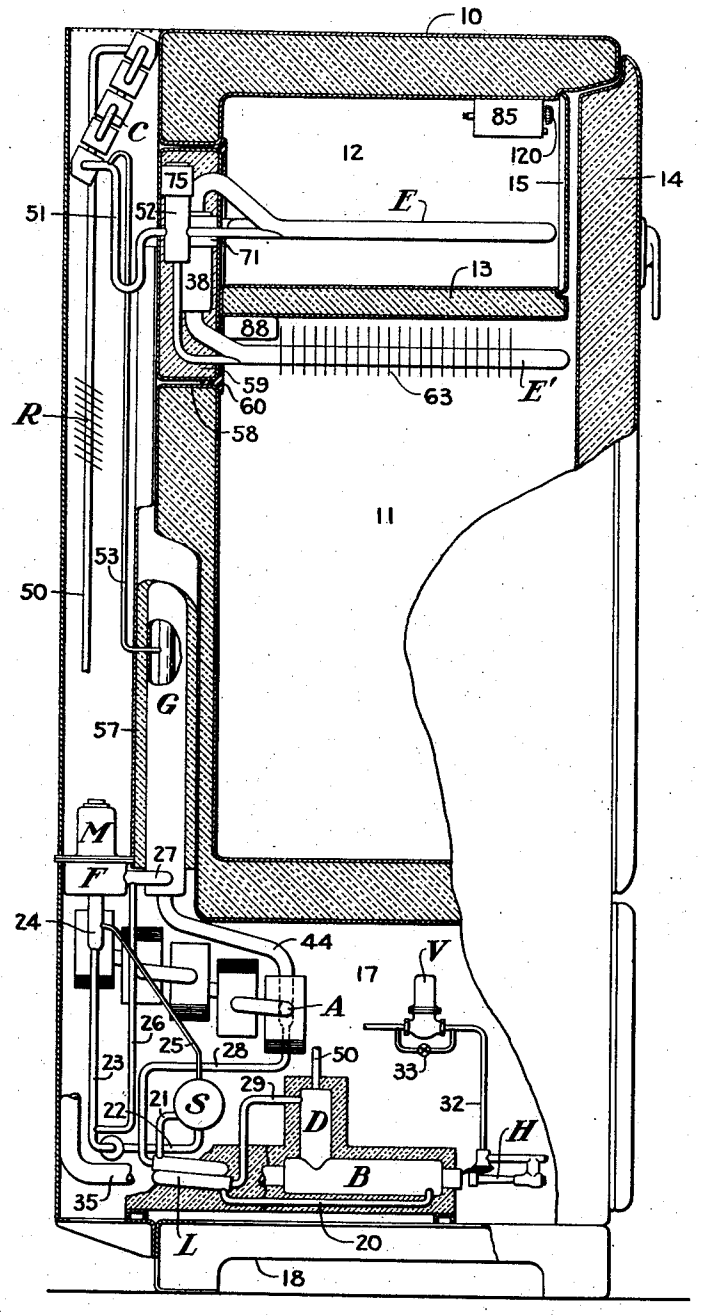


Fig. 1

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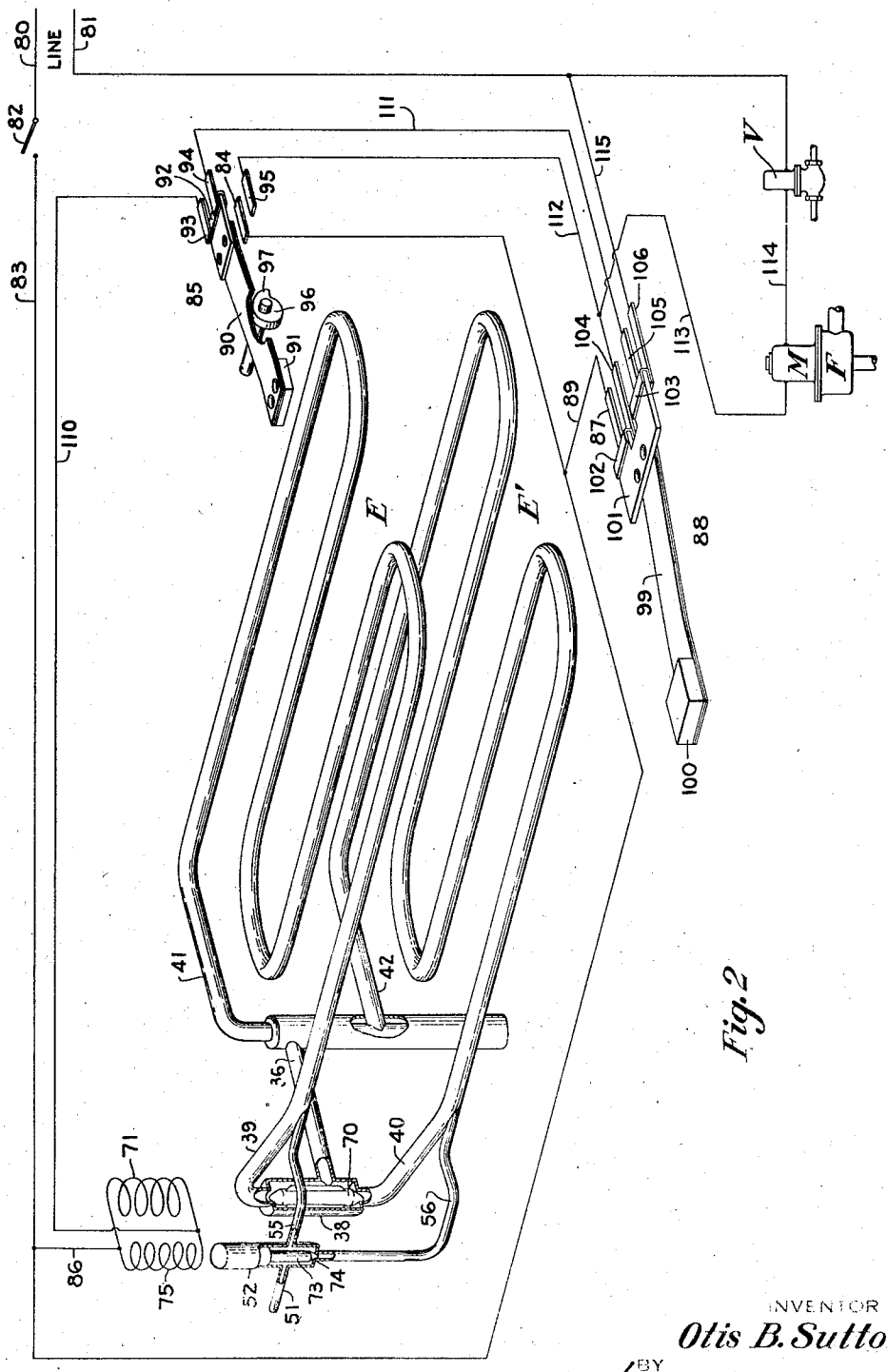


Fig. 2

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UNITED STATES PATENT OFFICE

2,377,051

REFRIGERATION

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Application August 23, 1940, Serial No. 353,805

21 Claims. (Cl. 62—5)

This application relates to the art of refrigeration and more particularly to a novel absorption refrigerating mechanism so constructed and arranged that the refrigerating effect may be caused to occur selectively in a high temperature refrigerating zone or in a low temperature refrigerating zone.

It is a further object of the present invention to provide a refrigerating system of the three-fluid absorption type in which the liquid refrigerant and inert gas are directed selectively into a selected one of a plurality of evaporating zones in order to restrict the refrigerating effect entirely to such selected zone.

It is a still further object of the present invention to provide a refrigerating system of the type above described in which one of a plurality of refrigerating zones is given the preference in response to refrigerating demand and in which means are provided for optionally giving the preference to the other refrigerating zone should conditions so require.

It is a further object of the present invention to provide a three-fluid absorption refrigerating apparatus in which movable means within the system are operative to direct the refrigerant and inert gas into a selected area of the evaporating zone and in which the said movable means are energized by a mechanism externally of the system having no moving parts passing through the fluid containing walls thereof.

Other objects and advantages of the invention will become apparent as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a partial sectional elevational view of a refrigerating machine embodying the present invention, and

Figure 2 is a perspective view of the evaporating mechanism and control construction drawn to an enlarged scale.

Referring now to the drawings in detail and first to Figure 1 thereof, there is illustrated a refrigerator cabinet 10 which includes an insulated food storage compartment 11 which underlies an insulated freezing compartment 12. The compartments 11 and 12 are separated by an insulated partition 13. An insulated door 14 provides access to the compartments 11 and 12 and a suitable inner door 15 provides access to the compartment 12 alone and prevents loss of cold air therefrom when the door 14 is opened merely to provide access to the compartment 11. A mechanism compartment 17 underlies and extends upwardly along the rear wall of the compartments 11 and 12. The cabinet construction is supported upon a suitable base member 18.

A suitable refrigerating mechanism is associated with the cabinet structure. This mechanism comprises a boiler B, an analyzer D, an inclined tubular air-cooled absorber A, an air-cooled rectifier R, a solution reservoir S, a liquid heat exchanger L, a gas heat exchanger G, a fast-freezing evaporator E, a high temperature evaporator E', a tubular air-cooled condenser C, and a gas circulating fan F which may be driven by a suitable electrical motor M.

The above described refrigerating system will be charged with a suitable refrigerant, such as ammonia, a suitable absorbent therefor, such as water, and an inert pressure equalizing medium preferably a dense gas like nitrogen.

The boiler and absorber are connected to form a solution circuit as follows: Weak solution is conveyed from the boiler to the upper portion of the absorber by way of conduit 20, liquid heat exchanger L, conduit 21, solution reservoir S, finned air-cooled conduit 22, and gas lift pump conduit 23. The reservoir is vented to the suction conduit 24 of the fan by means of a conduit 25. Pumping gas is supplied to the gas lift pump conduit 23 below the liquid level normally therein contained by means of a conduit 26 which receives gas from the discharge conduit 27 of the circulating fan. The lean solution traverses the absorber by gravity in counterflow relationship to a mixture of pressure equalizing medium and refrigerant vapor flowing upwardly therethrough. The lean solution absorbs refrigerant vapor from the mixture forming rich solution and the resulting heat of absorption is rejected to cooling air flowing over the fins on the exterior walls of the absorber tubes. The resulting rich solution is then returned to the analyzer by way of the conduit 28, liquid heat exchanger L, and the conduit 29.

The boiler is heated by means of a suitable heating element H which is illustrated as a gas burner including a suitable flame failure safety cut-off mechanism. Fuel is supplied to the burner H by way of a conduit 32 which includes the solenoid control valve V. A suitable by-pass 33 is provided around the valve V in order to maintain a pilot or igniting flame upon the burner H. The valve V is controlled in a manner to be described hereinafter. Waste products of combustion are conveyed away from the boiler B by way of the conduit 35 which extends upwardly in one corner of the vertically extending portion of the mechanism compartment 17. The flue 35 terminates adjacent the top wall of the cabinet construction though it is shown broken at the bottom portion thereof in order to facilitate illustration.

The absorber, gas heat exchanger, circulating fan and evaporator are connected in an inert gas circuit as follows: The lean gas formed in the absorber flows through the conduit 24 to the circulating fan F where it is placed under pressure and discharges through the conduit 27 into the outer path of the gas heat exchanger G. After

traversing the gas heat exchanger G, the lean gas is conveyed from the upper portion thereof by a conduit 36 into a gas flow control chamber 38 (see Figure 2).

The gas flow control chamber 38 communicates with the evaporators E and E' by means of the gas supply conduits 39 and 40, respectively. After traversing one or the other of the evaporators E or E' the inert gas is supplied to the inner path of the gas heat exchanger by means of the conduits 41 or 42, respectively. Referring back to Figure 1, after traversing the gas heat exchanger the rich inert gas is conveyed from the bottom portion of the gas heat exchanger G to the lower portion of the absorber A by way of the conduit 44 through which it flows in the manner heretofore described, thus completing the inert gas circuit.

The refrigerant vapor produced in the boiler B flows upwardly through the analyzer D in counterflow to strong solution flowing downwardly therethrough. The resulting purified vapor is conveyed from the upper portion of the analyzer to the upper portion of the air-cooled condenser C by means of the conduit 50 which includes the air-cooled rectifier R. The refrigerant vapor is liquified in the condenser C and discharges from the bottom portion thereof through a downwardly extending U-shaped conduit 51 into a refrigerant flow control chamber 52. The condenser side of the U-shaped conduit 51 is vented by means of a conduit 53 into the inner pass of the gas heat exchanger G.

Referring now to Figure 2, the refrigerant flow control chamber 52 is connected to the evaporators E and E' by means of the conduits 55 and 56, respectively.

The arrangement of the absorber with respect to the lower portion of the compartment 17 is such that cooling air may flow into the bottom and rear portions of the chamber 17, flow over the absorber upwardly through the chamber 17 along the rear wall of the storage chambers, over the rectifier and condenser and then discharges through the top of the cabinet construction. This cooling air serves to carry off the heat rejection by the absorber, rectifier and condenser. The boiler, as is illustrated, is positioned in the bottom central portion of the chamber 17 and the circulating fan F and motor M are positioned in the bottom portion of the vertically extending part of the chamber 17. The gas heat exchanger G is partially embedded in the rear insulated wall of the compartments 11 and 12 and is provided with a suitable insulating blanket 57 on the outside thereof. The rear wall of the compartments 11 and 12 is provided with an opening 58 which extends above and below the partition 13. A suitable insulated closure member 59 is provided to fit into the opening 58 to seal the same in conjunction with a sealing gasket 60. The upper portion of the gas heat exchanger G, the refrigerant flow control chamber 52, and the inert gas flow control chamber 38 are housed within the insulated portion of the closure member 59. The division panel 13 may be mounted upon the closure element 59 or may be mounted upon the cabinet construction proper, as desired. However, as illustrated, the division panel 13 is mounted upon the cabinet construction. With this arrangement the refrigerating mechanism may be slid into the cabinet from the rear, thus positioning the evaporators E and E' above and below the partition 13, respectively, closing the opening 58 and positioning the absorber-boiler assembly in the bottom portion of the compartment 17 and positioning the condenser-rectifier in the vertically extending portion thereof.

The evaporators E and E' are each designed to be of the type in which the inert gas will travel therethrough at a velocity sufficient to sweep the evaporating liquid refrigerant through the evaporator by the frictional drag of the inert gas stream flowing thereby. This arrangement renders the evaporator independent of inaccurate manufacture and non-leveling installation of the apparatus. It also assures positive propulsion of the liquid refrigerant and effective distribution thereof to all operative or effective portions of the evporating conduit. This subject matter per se forms the subject matter of the co-pending application of Curtis C. Coons and William H. Kitto, Serial No. 220,189, filed July 20th, 1938, now Patent No. 2,328,196, dated August 31, 1943.

As illustrated, the evaporators E and E' are each in the form of a substantially horizontal coiled conduit connected between the conduits 39 and 41 and the conduits 40 and 42, respectively. This is the preferred form of evaporator but other known forms may be utilized, if desired.

The evaporator E' is positioned in the extreme upper portion of the chamber 11 just under the partition 13 and is provided with suitable air-cooling fins 63. The evaporator E extends horizontally in the lower portion of the compartment 12 but far enough above the panel 13 to provide a storage space therebetween. A suitable shelf, if desired, may be positioned over the evaporator E in order to receive ice-freezing trays or the like.

Referring now to Figure 2, the control mechanism will be described. As is illustrated in Figure 2, the evaporator gas supply conduits 39 and 40 open into the top and bottom respectively of the flow control chamber 38 and the gas supply conduit 36 opens into the side thereof. A valve element 70 adapted to close communication between the chamber 38 and either of the conduits 39 and 40 is mounted within the chamber 38. The valve member 70 may be made of magnetic material or it may be made of non-magnetic material provided with magnetic inserts so that it may be operated by the magnetic field of the winding 71. In Figure 2 the winding 71 is shown diagrammatically above the chamber 38 but it will be understood that the same is wrapped around the top portion thereof as is indicated in Figure 1. When the winding 71 is de-energized the valve element 70 drops under its own weight and seals the conduit 40 from communication with the interior of the chamber 38 whereby the inert gas flowing through the conduit 36 flows in its entirety into the evaporator E through the conduit 39. Conversely, when the winding 71 is energized the valve element 70 is lifted by the magnetic attraction thereof and seals communication between the chamber 38 and the conduit 39 whereby all inert gas supplied to the conduit 36 flows into the evaporator E' through the conduit 40.

The liquid refrigerant control chamber 52 communicates at its bottom portion with the supply conduit 56 of the evaporator E'. The refrigerant supply conduit 51 opens into one side of the chamber 52 and the supply conduit 55 of the evaporator E opens into the opposite side thereof. A valve element 73 is mounted within the chamber 52 and may be constructed of magnetic material or may be made of non-magnetic material provided with magnetic inserts. The lower end of the element 73 as illustrated is provided with

a valve seat 74 designed to drop into and to seal the upper end of the conduit 56. A suitable solenoid winding 75 is wrapped about the upper portion of the chamber 52 as is illustrated in Figure 1. When the solenoid winding 75 is de-energized the valve element 73 drops of its own weight and the valve seat 74 thereof seats in the conduit 56 thereby breaking communications between the conduit 56 and the chamber 52. Under these conditions the liquid refrigerant supplied to the conduit 51 very quickly fills the small volume of space in the lower portion of the chamber 52 and then flows through the conduit 55 into the evaporator E. Conversely, when the winding 75 is energized the magnetic attraction thereof lifts the valve element 73 from its seat and all liquid refrigerant supplied to the conduit 51 then flows through the conduit 56 into the evaporator E'.

The apparatus is controlled by a suitable electrical control circuit as follows: Electric energy is supplied through a pair of electrical conductors 80 and 81. The electrical conductor 80 is provided with a manual cut-out switch 82 which connects to a conductor 83. The conductor 83 is connected directly to the stationary contact 84 of a switching mechanism 85. The conductor 83 is also connected to one end of each of the solenoid windings 71 and 75 by means of a conductor 86 and is connected to a stationary contact 87 of a second thermostatic switching mechanism 88 by means of a conductor 89.

The thermostatic switch 85 comprises a bi-metallic element 90 mounted upon a fixed support 91 and provided at its end with a contact bar 92 designed when in its upper position to complete a circuit between the stationary contacts 93 and 94 and designed when in its lower position to complete a circuit between the stationary contacts 84 and 95. A suitable control cam 96 is mounted to bear upon the lower face of the thermostatic mechanism 90 in order to resist downward movement thereof thereby to vary the temperature at which the circuit is made between the contacts 84 and 95. The cam is also provided with a projecting nose 97 which will force and hold the contact bar 92 in contact with the stationary contacts 93 and 94 regardless of the temperature when the nose 97 is brought to bear upon the bi-metallic element 90.

A switching mechanism 88 comprises a thermostatic bi-metallic element 99 which is mounted upon a fixed support 100. At its free end the bi-metallic element 99 carries an insulating plate 101 which in turn carries a pair of contact bars 102 and 103 which are insulated and spaced from each other. The contact bar 102 is designed to contact a pair of stationary contacts 87 and 104 and the contact bar 103 is designed to complete the circuit between a pair of stationary contacts 105 and 106. The arrangement is such that both circuits are made and broken simultaneously.

The stationary contact 93 is connected to one end of the solenoid windings 75 and 71 by means of a conductor 110. The stationary contact 94 is connected to the stationary contact 105 by means of a conductor 111. The stationary contact 95 is connected to the stationary contact 104 by means of a conductor 112. The conductor 112 is also connected to the motor M by means of a conductor 113. The motor M is in turn connected to the solenoid valve V by means of a conductor 114 and the solenoid valve V is then connected to the line 81. The line 81 is also connected to the stationary contact 106 by means of a conductor 115.

Referring now to Figure 1, the switching mechanism 85 is shown as being positioned in the top front portion of the compartment 12 and a suitable knob 120 is provided for adjusting the cam 96. The switch 82 may also be included in this assembly if desired. With this arrangement the thermostat 98 will respond to the temperature of the air within the compartment 12; however, it is within the purview of the invention to have the thermostat respond directly to the temperature of the evaporator E, if desired.

The switching mechanism 88 is mounted within the top rear portion of the compartment 11 and the thermostat 99 therein responds to temperature of the air within such compartment, but it is within the purview of the invention so to arrange the switching mechanism 88 that the thermostat 99 responds directly to the temperature of the evaporator E'.

The operation of the control mechanism is as follows: Assume that the apparatus has not been operating and that both of the compartments 11 and 12 are above the control temperature thereof. Under these conditions the bimetallic elements 90 and 99 will have flexed downwardly into contact with the stationary contacts 84, 95, 87, 104, 105 and 106. Under these conditions the solenoids 71 and 75 are de-energized by reason of the open circuit between the stationary contacts 93 and 94. Therefore, the valve mechanisms 73 and 70 will be in the position shown in Figure 2 and all liquid refrigerant and inert gas will be supplied to the evaporator E through the conduits 55 and 39, respectively, and no liquid refrigerant or inert gas will be supplied to the evaporator E'. The valve V and motor M will be energized through the following circuit: 81, V, 114, M, 113, 112, 104, 102, 87, 89, 83, 82 and 80. The apparatus will continue operating in this manner until the temperature within the compartment 12 reaches the value for which the apparatus is set whereupon the thermostat 90 will flex upwardly opening the circuit between the elements 84 and 95 and closing the circuit between the contacts 93 and 94.

The position of the thermostatic element 99 will be unchanged as no refrigeration has been produced within the compartment 11 by the evaporator E'. The solenoid coils 75 and 71 will now be energized through the following circuit: 80, 82, 83, 86, 75 and 71, 110, 93, 92, 94, 111, 105, 103, 106, 115 and 81. This will raise the elements 73 and 70 by the magnetic pull of the solenoid coil and all liquid refrigerant and inert gas will now flow through the evaporator E'. The circuit for energizing the valve V and motor M will now be as follows: 81, V, 114, M, 113, 112, 104, 102, 87, 89, 83, 82 and 80. This mode of operation will continue until the refrigerating means in the compartment 11 have been satisfied in which event the thermostatic element 99 will respond to the temperature of the compartment 11 and will raise the contacts 102 and 103, thus breaking the circuit between the contacts 87 and 104 and the contacts 105 and 106, respectively.

The above assumes that the refrigerating conditions within the compartment 12 remain satisfactory during the period when the refrigerating needs of the compartment 11 were being met. However, if the temperature within the compartment 12 should rise beyond the control point before the refrigerating needs of the compartment 11 are satisfied, the thermostatic element

90 would flex downwardly into the position described in connection with the first series of operation, thus de-energizing the coils 71 and 75 and re-energizing the solenoid valve V and motor M through the stationary contacts 84 and 95.

Should the refrigerating needs of the compartment 11 be met, the thermostatic element 99 will flex upwardly, as viewed in Figure 2, and energization of the motor M and valve V will then be through the following circuit: 81, V, 114, M, 113, 112, 95, 92, 84, 83, 82 and 80.

Consequently, it may be seen from this that the apparatus is arranged to supply the refrigerating demands of either compartment but that the needs of the fast-freezing compartment take precedence over those of the storage compartment. However, the cam 96 is provided to reverse this arrangement to give precedence to the needs of the storage compartment if so desired and to vary the control point in compartment 12 without affecting the control point in compartment 11.

Though the apparatus has been disclosed with a particular order of precedence, it is within the scope of the invention to reverse the relative positions of the thermostatic switch constructions 85 and 88 in order to give preference to the food storage compartment if that arrangement should be desired.

The present invention thus provides an arrangement in which low temperature refrigeration may be provided in a low temperature compartment for the purpose of freezing ice and storing foodstuffs requiring low temperature refrigeration, while higher temperature and consequently higher humidity refrigeration may be produced in another compartment for normal foodstuffs storage preservation. This is accomplished by totally diverting the flow of both liquid refrigerant and inert gas from one evaporating zone to the other, thereby rendering one or the other evaporating zone totally inactive. The control mechanism is so constructed and arranged to give precedence to a selected one of the refrigerating zones and means are provided for reversing this order of precedence temporarily in order to meet extraordinary demands, unusual needs, or the like.

While the invention has been illustrated and described herein in considerable detail, various changes may be made in the arrangement, construction and proportion of parts without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. Hermetically sealed absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, means for directing the inert gas and liquefied refrigerant into one only of said evaporators, and magnetic means positioned exteriorly of the fluid confining walls of said apparatus for operating said directing means.

2. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, flow control means in said inert gas circuit arranged to restrict the flow of inert gas to a selected one of said evaporators, means including flow control means arranged to convey refrigerant liquid from said liquefying means to said selected one of said evaporators, magnetic means positioned exteriorly of the fluid confining walls of the apparatus for operating said flow control means by the force of a magnetic field passing through said fluid confining walls and refrigeration demand responsive means for controlling the operation of both of said flow control means.

3. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, flow control means in said inert gas circuit arranged to restrict the flow of inert gas to a selected one of said evaporators, means including flow control means arranged to convey refrigerant liquid from said liquefying means to said selected one of said evaporators, and refrigeration demand responsive means for controlling the operation of both of said flow control means, said refrigeration demand responsive means being arranged to meet the refrigerating needs of one of said evaporators in preference to the other thereof.

4. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, flow control means in said inert gas circuit arranged to restrict the flow of inert gas to a selected one of said evaporators, means including flow control means arranged to convey refrigerant liquid from said liquefying means to said selected one of said evaporators, refrigeration demand responsive means for controlling the operation of both of said flow control means, said refrigeration demand responsive means being arranged to meet the refrigerating needs of one of said evaporators in preference to the other thereof, and manually operable means for reversing the order of said preference.

5. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, flow control means in said inert gas circuit arranged to restrict the flow of inert gas to a selected one of said evaporators, means including flow control means arranged to convey refrigerant liquid from said liquefying means to said selected one of said evaporators, refrigeration demand responsive means for controlling the operation of both of said flow control means, said refrigeration demand responsive means being arranged to meet the refrigerating needs of one of said evaporators in preference to the other thereof, and manually operable means for operating said flow control means to a particular operable position independently of refrigeration demand.

6. Refrigerating apparatus including a cabinet construction having high and low temperature refrigerating compartments insulated from each other, an evaporator having a part in said high temperature and a part in said low temperature compartment, means for circulating an inert gas through a circuit including each of said evaporator parts, flow control means for preventing inert gas flow through one of said evaporator parts, a source of refrigerant liquid, flow control means for directing liquid refrigerant from said source only into the evaporator part through which inert gas is flowing and temperature re-

sponsive means for governing the operation of both of said flow control means.

7. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, means for heating said boiler, means in said inert gas circuit for circulating the inert gas, flow control means for directing liquid refrigerant from said liquefying means into a selected one of said evaporators and for preventing flow of inert gas through the other of said evaporators, thermostatic means responsive to a thermal condition produced by one of said evaporators arranged in one position to operate said flow control means in a predetermined manner and in another position to energize said heating means and said circulating means, and thermostatic means responsive to a thermal condition produced by the other of said evaporators operative in one position to condition said apparatus for control of said flow control means by said first mentioned thermostatic means and to energize said heating means and said inert gas circulating means.

8. In a refrigerating apparatus a plurality of parallel connected tubular evaporators, a source of liquid refrigerant including a heated part, means for heating said heated part, means for circulating an inert gas through a circuit including said evaporators and a control device for restricting inert gas flow to a selected one of said evaporators, means for conducting liquid refrigerant from said source of liquid refrigerant to said evaporators including a control device for restricting the flow of liquid refrigerant to said selected one of said evaporators, control mechanism arranged to control said heating means, said circulating means and said flow control devices to limit production of the refrigerating effect to a selected one of said evaporators at any one time, and means for altering the temperature maintained by one of said evaporators without altering the temperature maintained by another of said evaporators.

9. In an absorption refrigerating mechanism, a source of refrigerant liquid including a heated part, means for heating said heated part, a first evaporator, a second evaporator, an inert gas circulating means, means for directing the flow of inert gas from said circulating means to a selected evaporator, means for directing refrigerant liquid from said source of refrigerant liquid to said selected evaporator, a first thermostatic means responsive to a thermal condition produced by said first evaporator, and a second thermostatic means responsive to a thermal condition produced by said second evaporator, said first thermostatic means being arranged to condition said flow directing means for operation under the control of said second thermostatic means to direct refrigerant liquid and inert gas into said second evaporator when there is no demand for refrigeration by said first evaporator and to condition said flow directing means to supply refrigerant liquid and inert gas to said first evaporator and to energize said heating means and said circulating means to produce refrigeration in said first evaporator in response to a demand therefor.

10. In an absorption refrigerating mechanism, a source of refrigerant liquid including a heated part, means for heating said heated part, a first evaporator, a second evaporator, an inert gas circulating means, means for directing the flow of inert gas from said circulating means to a selected evaporator, means for directing refrigerant liquid from said source of refrigerant liquid to said selected evaporator, a first thermostatic means responsive to a thermal condition produced by said first evaporator, and a second thermostatic means responsive to a thermal condition produced by said second evaporator, said first thermostatic means being arranged to condition said flow directing means for operation under the control of said second thermostatic means to direct refrigerant liquid and inert gas into said second evaporator when there is no demand for refrigeration by said first evaporator and to condition said flow directing means to supply refrigerant liquid and inert gas to said first evaporator and to energize said heating means and said circulating means to produce refrigeration in said first evaporator in response to a demand therefor, said second thermostatic means being arranged to energize said heating means and said inert gas circulating means in response to a demad for refrigeration by said second evaporator.

11. In an absorption refrigerating mechanism, a source of refrigerant liquid including a heated part, means for heating said heated part, a first evaporator, a second evaporator, an inert gas circulating means, flow directing means for directing the flow of inert gas from said circulating means to a selected evaporator, flow directing means for directing refrigerant liquid from said source of refrigerant liquid to said selected evaporator, a first thermostatic means responsive to a thermal condition produced by said first evaporator, a second thermostatic means responsive to a thermal condition produced by said second evaporator, said first thermostatic means being arranged to condition both of said flow directing means for operation under the control of said second thermostatic means to direct refrigerant liquid and inert gas into said second evaporator when there is no demand for refrigeration by said first evaporator and to condition both of said flow directing means to supply refrigerant liquid and inert gas to said first evaporator and to energize said heating means and said circulating means to produce refrigeration in said first evaporator in response to a demand therefor, said second thermostatic means being arranged to energize said heating means and said inert gas circulating means in response to a demand for refrigeration by said second evaporator, and manually operable means for adjusting the control point of said first thermostatic means.

12. In an absorption refrigerating mechanism, a source of refrigerant liquid including a heated part, means for heating said heated part, a first evaporator, a second evaporator, an inert gas circulating means, flow directing means for directing the flow of inert gas from said circulating means to a selected evaporator, flow directing means for directing refrigerant liquid from said source of refrigerant liquid to said selected evaporator, a first thermostatic means responsive to a thermal condition produced by said first evaporator, a second thermostatic means responsive to a thermal condition produced by said second evaporator, said first thermostatic means being arranged to condition said flow directing means for operation under the control of said second thermostatic means to direct refrigerant liquid and inert gas into said second evaporator when there is no demand for refrigeration by said first evaporator and to condition said flow directing means to supply refrigerant liquid and

inert gas to said first evaporator and to energize said heating means and said circulating means to produce refrigeration in said first evaporator in response to a demand therefor, said second thermostatic means being arranged to energize said heating means and said inert gas circulating means in response to a demand for refrigeration by said second evaporator, and means for operating said first thermostatic means to condition normally evidencing lack of refrigeration demand by said first evaporator independently of the condition of said first evaporator.

13. Absorption refrigerating apparatus comprising a solution circuit including a boiler and an absorber, an inert gas circuit including said absorber and a pair of evaporators, means for liquefying refrigerant vapor produced in said boiler, means for directing the inert gas and liquefied refrigerant into one only of said evaporators, and means arranged exteriorly of the fluid confining walls of the apparatus for operating said last-mentioned means by producing a magnetic field which passes through the walls of said apparatus.

14. In a refrigerating apparatus of the absorption type a pair of evaporators, an absorber, means connecting said evaporators in parallel with each other and in series with said absorber for circulation of inert gas therebetween, means for liquefying refrigerant vapor, means connecting said evaporators to said liquefying means in parallel, valve means in each of said connecting means arranged to direct the liquid refrigerant and inert gas into a selected one of said evaporators, and means arranged exteriorly of the fluid confining wall of said apparatus for producing operative magnetic fields for simultaneously operating each of said valve means.

15. In a refrigerator, a cabinet structure including a pair of insulated refrigerating chambers; an absorption refrigerating apparatus associated with said cabinet structure including an evaporator in each of said chambers, an absorber positioned externally of said chambers, means providing for circulation of an inert gas between said evaporators and said absorber, a generator, means providing for circulation of absorption solution between said absorber and said generator, a condenser arranged externally of said chambers and connected to receive refrigerant vapor from said generator, and means for directing liquid refrigerant formed in said condenser and inert gas from said absorber into a selected one of said evaporators.

16. In a refrigerating apparatus of the absorption type a pair of evaporators, an absorber, means connecting said evaporators in parallel with each other and in series with said absorber for circulation of inert gas therebetween, means for liquefying refrigerant vapor, means connecting said evaporators to said liquefying means in parallel, means in said connecting means for directing the liquid refrigerant and inert gas entirely into a selected one of said evaporators, and means positioned externally of the fluid confining walls of the apparatus for operating said directing means.

17. In a refrigerator; a cabinet structure including a pair of insulated refrigerating chambers; an absorption refrigerating apparatus associated with said cabinet structure including an evaporator in each of said chambers, an absorber positioned externally of said chambers, means providing for circulation of an inert gas between said evaporators and said absorber including means arranged to prevent flow of inert gas through a selected one of said evaporators, a generator, means providing for circulation of absorption solution between said absorber and said generator, a condenser arranged externally of said chambers and connected to receive refrigerant vapor from said generator, and means for directing refrigerant liquid from said condenser into the other of said evaporators.

18. In a refrigerating apparatus of the absorption type a pair of evaporators, an absorber, means connecting said evaporators in parallel with each other and in series with said absorber for circulation of inert gas therebetween, means for liquefying refrigerant vapor, means connecting said evaporators to said liquefying means in parallel, valve means in each of said connecting means arranged to direct the liquid refrigerant and inert gas into a selected one of said evaporators, and magnetic means positioned exteriorly of the fluid confining walls of said apparatus for simultaneously operating each of said valve means, and refrigeration demand responsive means controlling said magnetic means.

19. In a refrigerator; a cabinet structure including a pair of insulated refrigerating chambers; an absorption refrigerating apparatus associated with said cabinet structure including an evaporator in each of said chambers, an absorber positioned externally of said chambers, means providing for circulation of an inert gas between said evaporators and said absorber including flow control means arranged to restrict the flow of inert gas to a selected one of said evaporators, a generator, means providing for circulation of absorption solution between said absorber and said generator, a condenser arranged externally of said chambers and connected to receive refrigerant vapor from said generator, means arranged to convey refrigerant liquid from said condenser to said selected one of said evaporators, and refrigeration demand responsive means for controlling the operation of said flow control means.

20. Absorption refrigerating apparatus comprising a plurality of vessels; means connecting said vessels to form a plurality of paths of flow of fluid including a path of flow of refrigerant fluid, a path of flow of absorption fluid and a path of flow of inert fluid; said vessels and said connecting means being hermetically sealed; fluid flow control valve means hermetically sealed in one of said paths of fluid flow; and magnetic means positioned outside said fluid flow path and operable to actuate said valve means by the magnetic field thereof passing through the fluid confining walls of said path of fluid flow.

21. Absorption refrigerating apparatus comprising a circuit for absorption fluid including a generator and an absorber; a circuit for an inert pressure equalizing fluid including said absorber and an evaporator; a circuit for refrigerant fluid including said generator, said evaporator and said absorber; fluid flow regulating valve means in one of said circuits; and magnetic field producing means positioned exteriorly of the fluid confining walls of the apparatus and arranged to operate said valve means by producing a magnetic field passing through the fluid confining walls of the apparatus.

OTIS B. SUTTON.